DOCUMENT RESUME

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ABSTRACT

Computer routines that update the Instructional Management System (IMS) Version 3 student data base which supports the Southwest Regional Laboratory's (SWRL) student monitoring system are described. Written in IBM System 360 FORTRAN IV, the program updates the data base by adding, changing and deleting records, as well as adding and deleting classes. This technical note is intended to serve as the software documentation for the program. Included are a program description, data format specifications, program constraints and limitations, and operating instructions. Program flowcharts, program listings, and sample output reports are also provided. (Author/DGC)

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ED108619

SWRL

SOUTHWEST REGIONAL LABORATORY
TECHNICAL NOTE

DATE April 10, 1972

NO TN 5-72-19

TITLE: IMS VERSION 3 STUDENT DATA BASE MAINTENANCE PROGRAM

AUTHOR: John R. Brown

ABSTRACT

This document describes the computer program that updates the IMS Version 3 student data base. The program updates the data base by adding, changing and deleting records, as well as adding and deleting classes.

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IMS VERSION 3 STUDENT DATA BASE MAINTENANCE PROGRAM

1.0 - PROGRAM IDENTIFICATION

IMS - Student Data Base Maintenance

2.0 - OBJECTIVE*

To provide the capabilities for adding, changing and deleting records in the student data base.

3.0 - PROGRAM DESCRIPTION

3.1 - Program Logic

The transaction (update) cards are read in and sorted in ascending order by class I.D., record type, unit and student number. As the old data base is read, the record I.D. is compared to that of the update record. The new data base is created by the matching/merging of these records.

3.2 - Variables and Internal Tables

3.2.1 - Arrays

ISAVE (23,N) - An input/output array which contains the elements of the update record. N is the number of records in the array.

IBASE (23) - An input/output array which contains the elements of the record in the old data base.

LIST (N) - A work-storage array which contains the indexes of the sorted array ISAVE. N is the number of records in the array.

IHEAD (N) - A scratch-storage area used in conjunction with LIST.

KEYS (6,N) - A storage array which contains the keys used for sorting the update records. N is the number of records in the array.

DATE (18) - An array which contains the alphanumeric date (month, day and year).

3.2.2 - Variables

IDELE, JTY4, KODE, LAST — The values (negative, zero or positive) of these variables are used to determine which, of several, paths are to be taken during execution.

*See TN 5-72-11 for the User's Guide.

ID1 Contain the class I.D. of the update
ID2 record (two six digit integers).

ITYPE - Contains the type of the update record.

IUNIT - Contains the unit number of the update record.

ISTUD - Contains the student number of the update record.

JD1 Contain the class I.D. of the record in
JD2 old data base (two six digit integers).

JTYPE - Contains the type of the record in the old data base.

JUNIT - Contains the unit number of the record in the old data base.

JSTUD - Contains the student number of the record in the old data base.

KOMM - Contains the alphanumeric command code.

KAD - Contains the code to add a record.

KCHANG - Contains the code to change a record.

KDELET - Contains the code to delete a record.

KADCLA - Contains the code to add a class.

KDECLA - Contains the code to delete a class.

4.0 - SUBROUTINES AND FUNCTIONS

SORT (LIST,IHEAD,N,COMPAR) - This integer function is a general purpose in-core sorting routine that sorts records by indexes. The routine was written by W.V. Snyder of Jet Propulsion Laboratory and is documented in TN's 5-71-98 and 5-72-07 by Lanaii Kline. LIST, an output argument, will contain the indexes of the sorted records; IHEAD is used as a scratch area; N is the number of records to be sorted; and COMPAR is an input argument, the value of which is determined by the comparison done in COMPAR.

COMPAR (I,J) - This user defined integer function, called by the function SORT, determines the order of the sort. I and J are the indexes of the records to be compared. COMPAR will have a negative value if the record referenced by I is to be sorted before the record referenced by J, a zero value if the order is immaterial, and a positive value otherwise.

5.0 - DATA SPECIFICATIONS

5.1 - Input Formats
(See Attachments 1-4)

5.2 - Output Formats
(See Attachment 6)

6.0 - PROGRAM CONSTRAINTS AND LIMITATIONS

6.1 - Programming Language
Fortran IV

6.2 - Vendor
Campus Computing Network (CCN) UCLA

6.3 - Storage Requirements
Object code - 17208 bytes
Array area - 58188 bytes
Total area available - 239808 bytes

6.4 - Hardware Configuration
IBM System 360/91, magnetic tapes, punched cards

6.5 - Program Parameters
The maximum number of update records that can be processed is 500.

6.6 - Error Messages
The errors that occur during execution will be reported in a program log. No operator intervention is required since the error conditions are under program control. See Attachment 6 for a sample of the error messages.

IMS VERSION 3 STUDENT DATA BASE MAINTENANCE PROGRAM

7.0 - OPERATING INSTRUCTIONS

The program is executed in batch mode using punched cards and magnetic tape as input. A sample deck setup is shown below. See Attachments 5 and 6 for sample input and sample output data, respectively.

Sample Deck Setup (WATFIV)

```
//AGBOO5XX JOB 'time,i/o,R,ID=SWRL,BIN=0738','name'
// PASSWORD xxxxxxxx
// EXEC WATFIV,RG=350K,PG=100
     DD Statements (Define I/O tapes)
//GO.SYSIN DD *
*JOB           ID,Time=xx,Pages=xxx
                    Program Deck
*RUN
                     Data Deck
*WATEND


/*
//
```

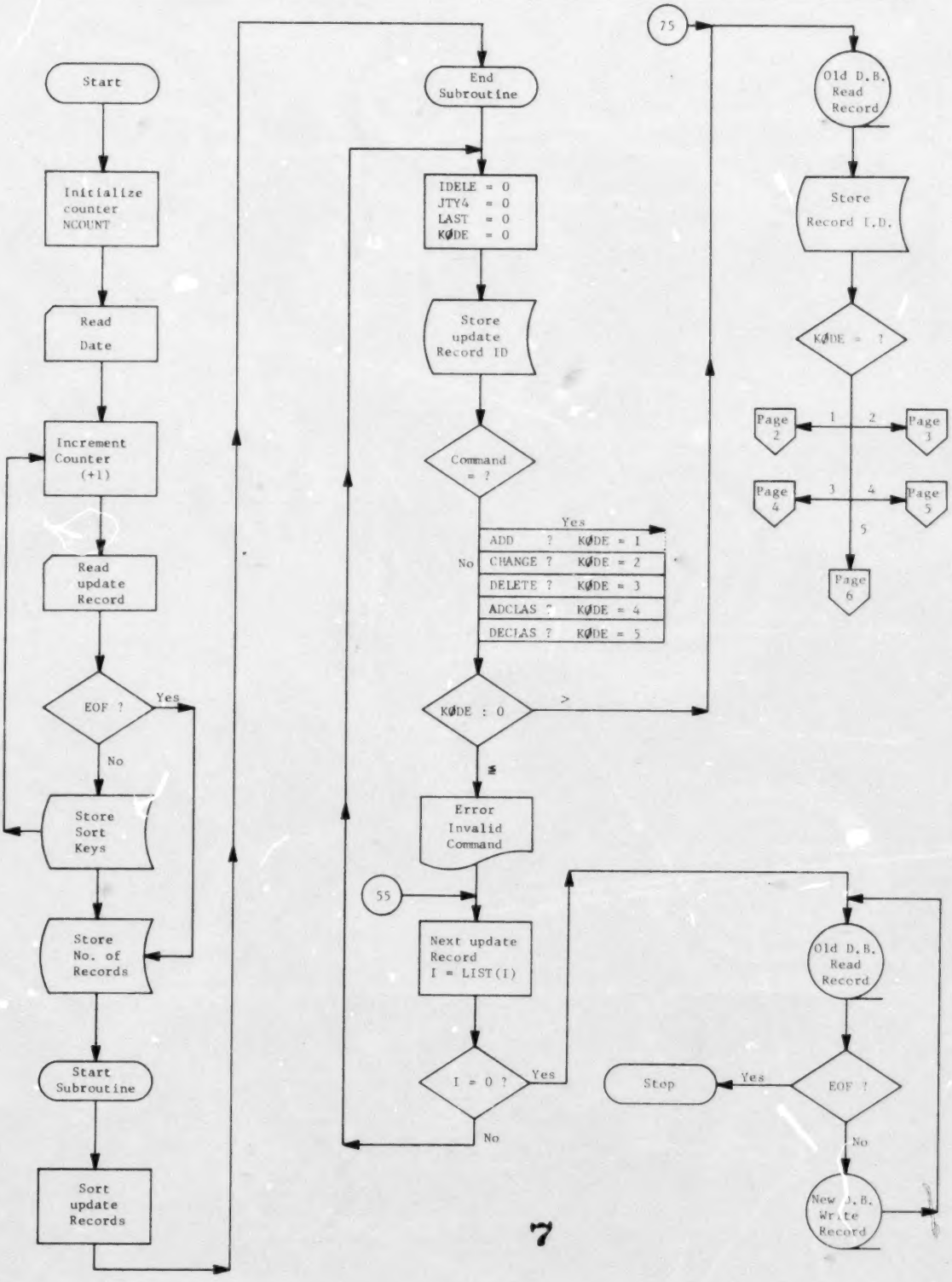
NØTE!! All control card information must begin in column 1.
On the *JØB card, the ID must begin in column 16.

8.0 - PROGRAM FLOWCHART

SWRI

FLOWCHART LAYOUT FORM

PROGRAMMER: John R. Brown
PROGRAM ID: IMS - Student Data Base Maintenance
DATE:
PAGE 1 OF 6

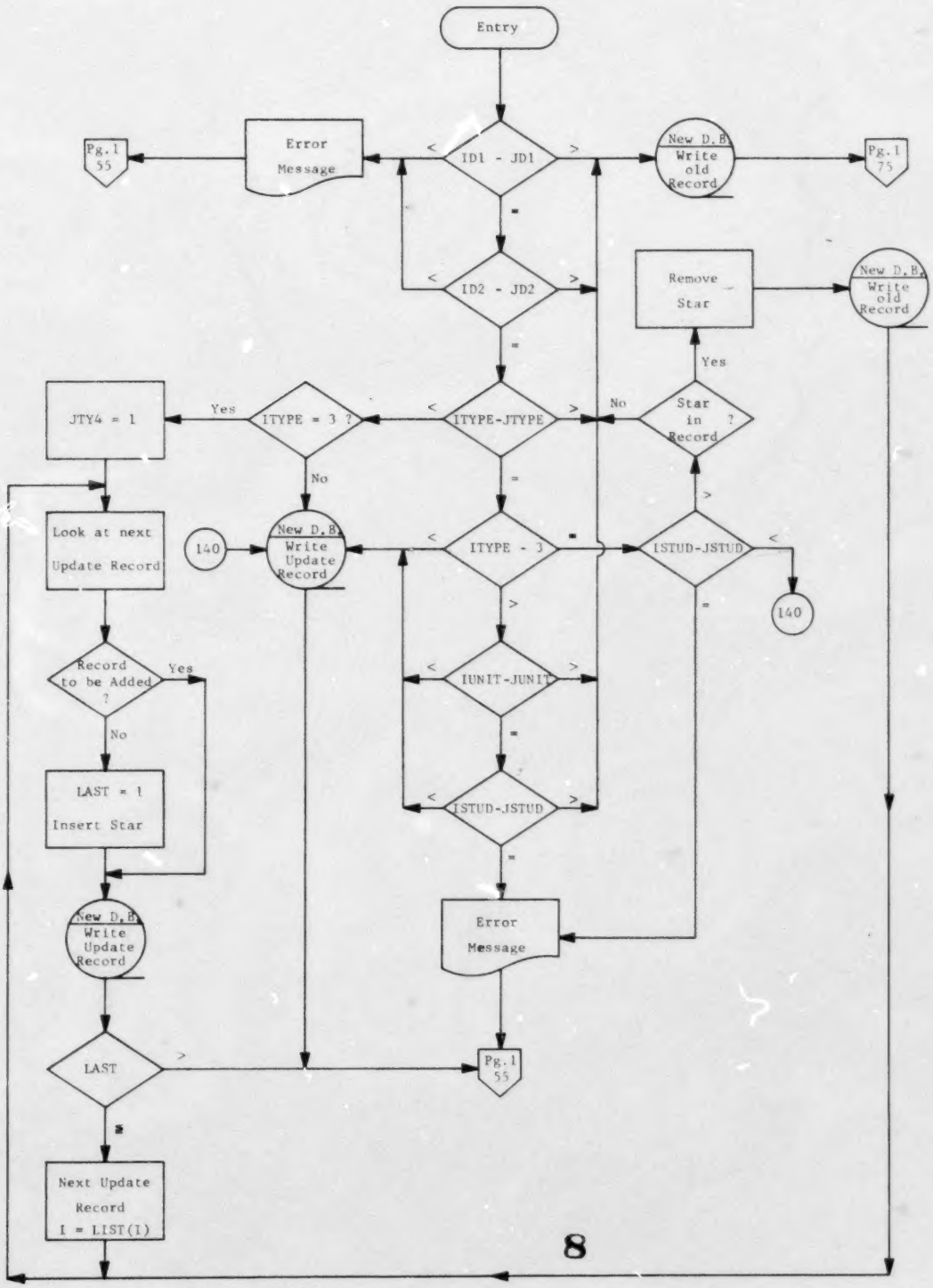


SWRL

FLOWCHART LAYOUT FORM

PROGRAMMER: John R. Brown DATE:

PROGRAM ID: IMS - Student Data Base Maintenance (Cont'd) PAGE 2 OF 6



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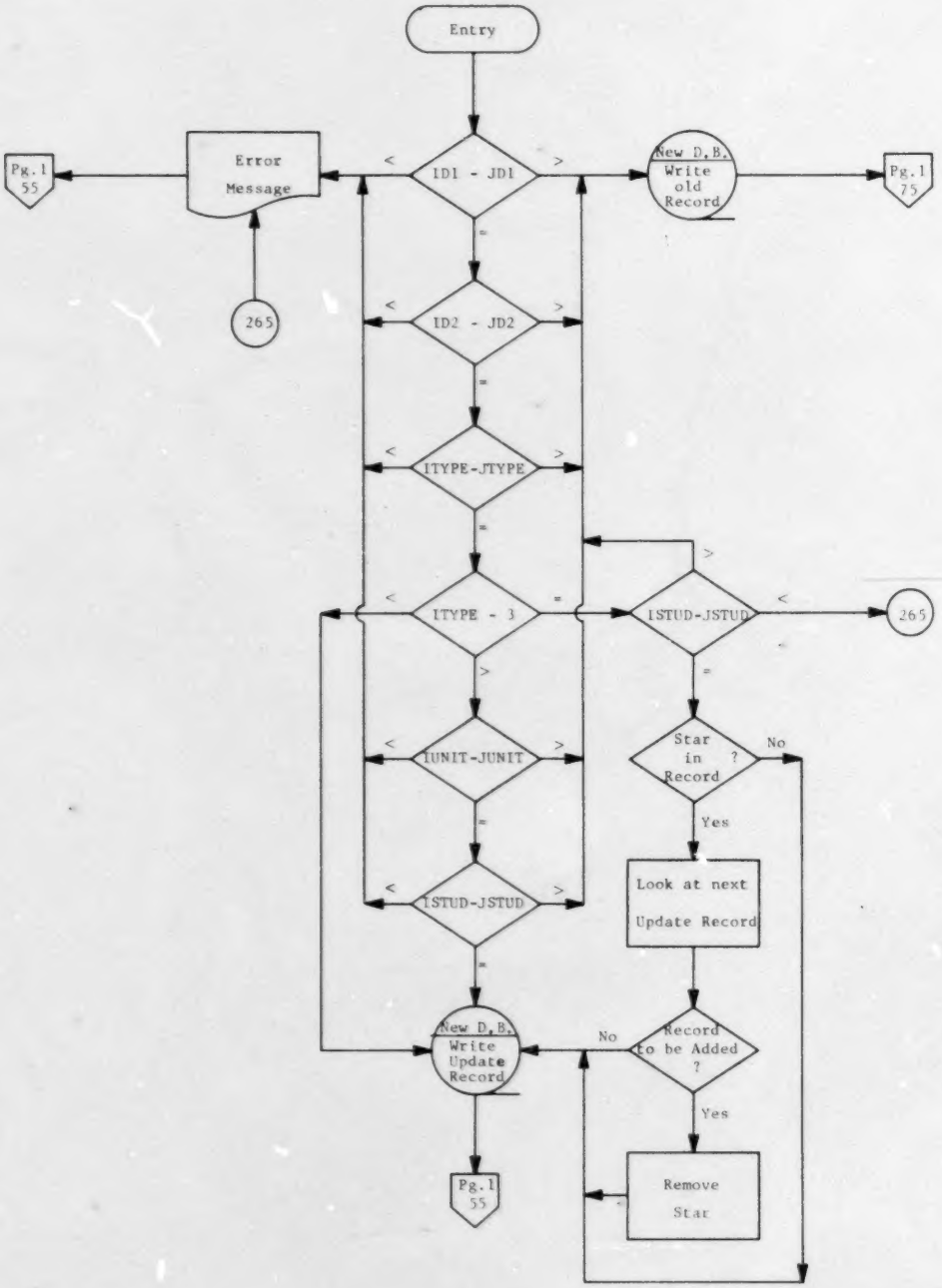
FLOWCHART LAYOUT FORM

PROGRAMMER: John R. Brown DATE: _____

PROGRAM ID: IMS - Student Data Base Maintenance (Cont'd) PAGE 3 OF 6

CHANGE A RECORD

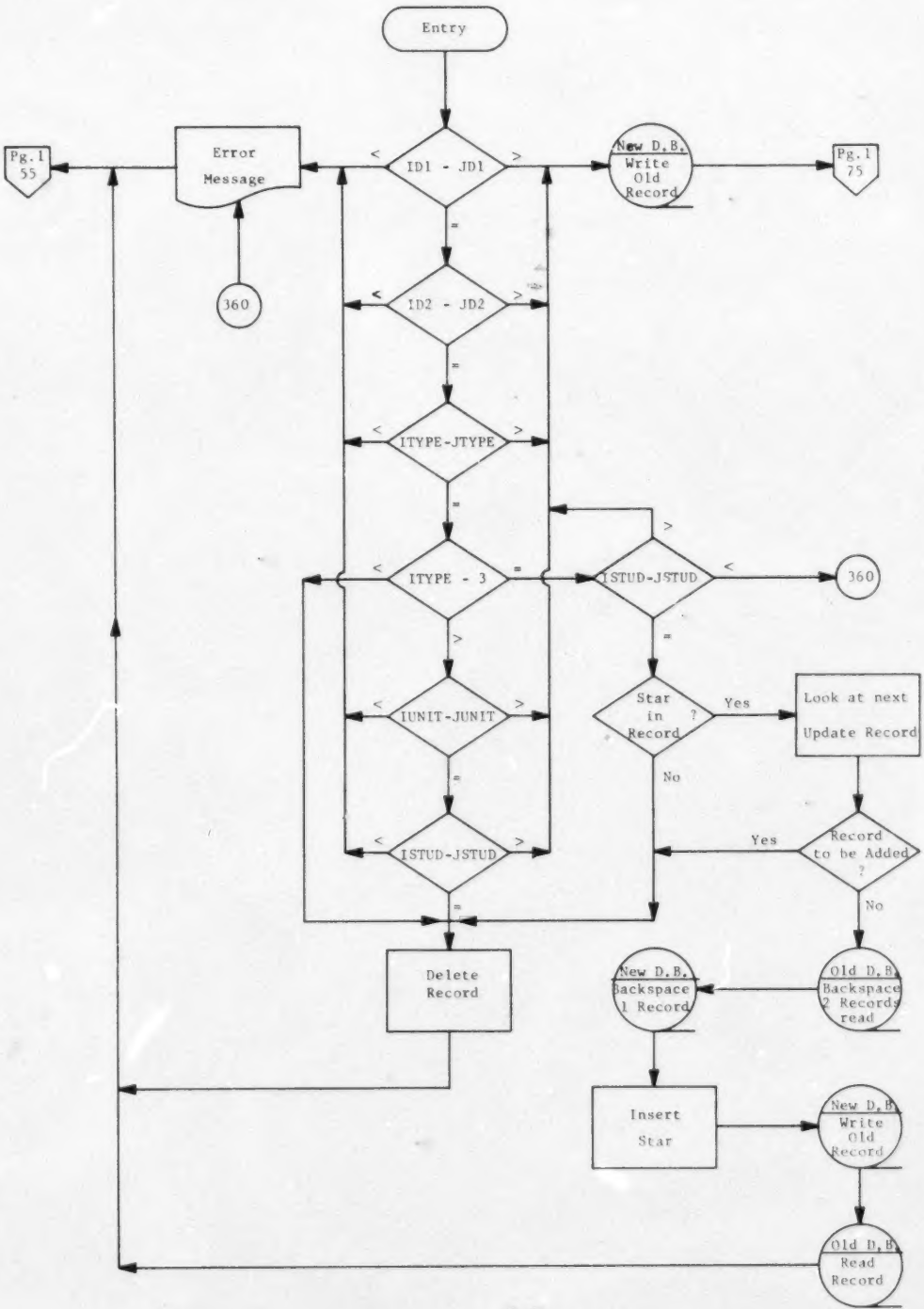


SWRI

FLOWCHART LAYOUT FORM

PROGRAMMER: John R. Brown DATE:
PROGRAM ID: IMS - Student Data Base Maintenance (Cont'd) PAGE 4 OF 6

DELETE A RECORD



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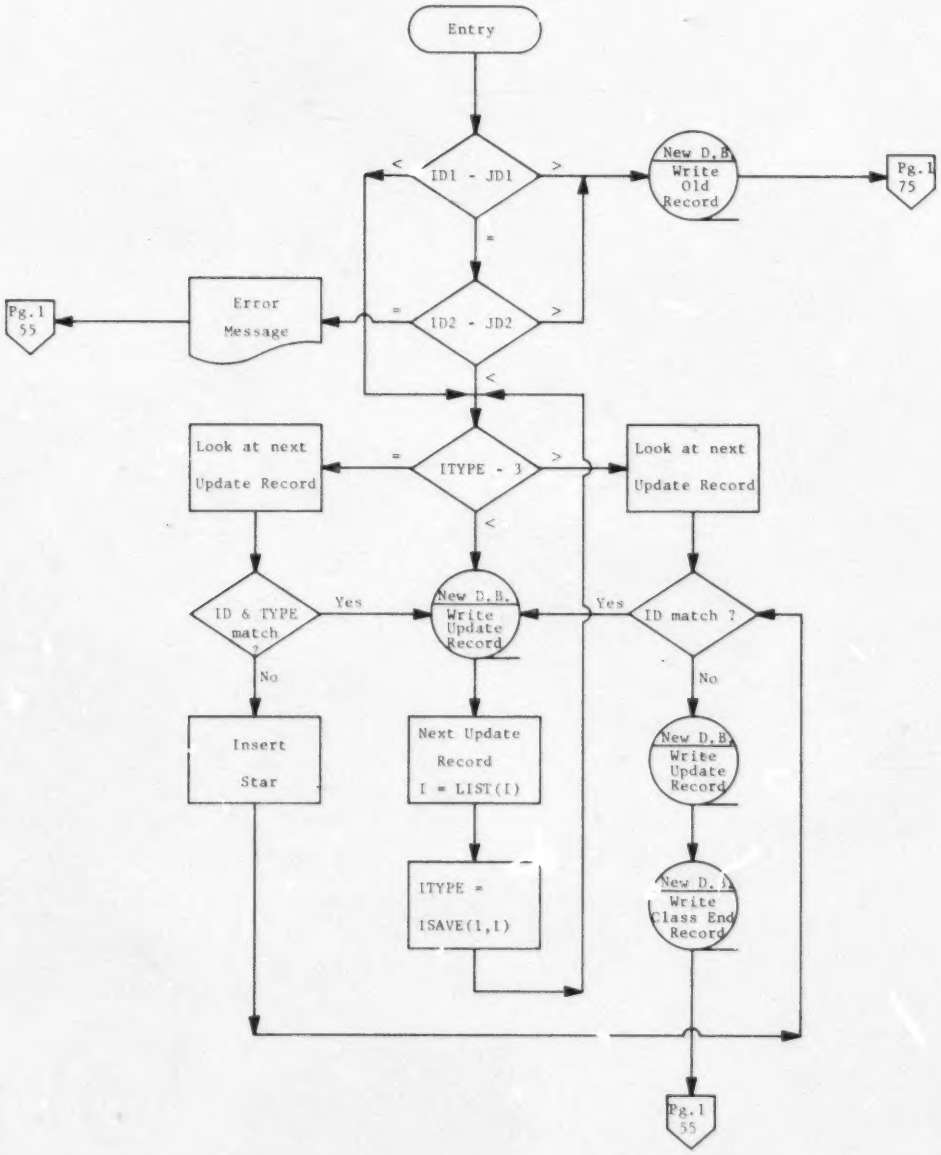
FLOWCHART LAYOUT FORM

PROGRAMMER: John R. Brown DATE:

PROGRAM ID: IMS - Student Data Base Maintenance (Cont'd) PAGE 5 OF 6

ADD A CLASS



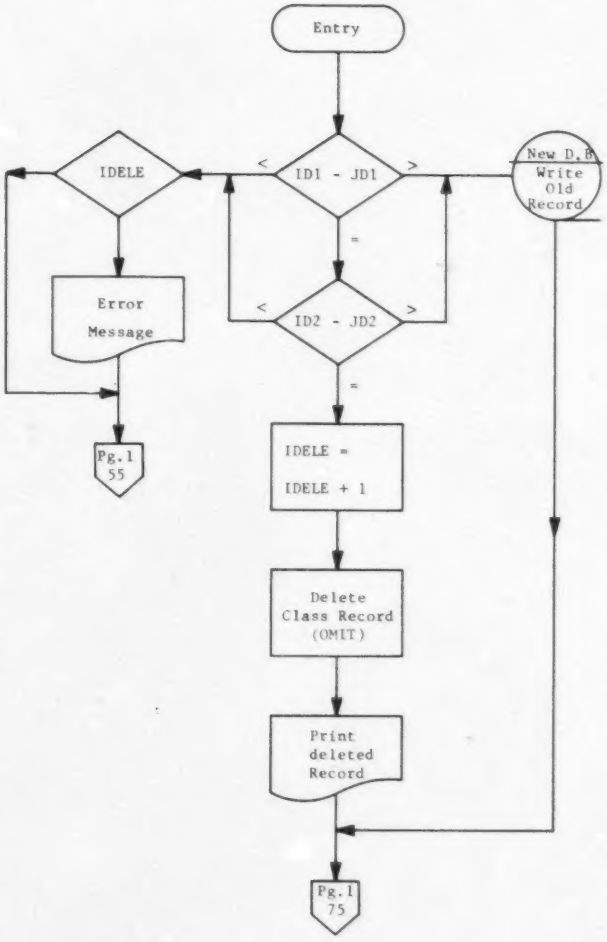
SWRI

Flowchart Layout Form

PROGRAMMER: John R. Brown DATE: _____

PROGRAM ID: IMS - Student Data Base Maintenance (Cont'd) PAGE 6 OF 6

DELETE A CLASS



9.0 - PROGRAM LISTING

```
C**** PROGRAM ID: IMS - STUDENT DATA BASE MAINTENANCE
C********** DATE: JANUARY 12 1972
C******** AUTHOR: JOHN R BROWN
      INTEGER SORT
      EXTERNAL COMPAR
      DIMENSION DATE(18)
      DIMENSION ISAVE(23,5000),JBASE(23)
      DIMENSION LIST(5000),IHEAD(5000)
      COMMON KEYS(6,5000)
      DATA KADD,KCHANG,KDELET,KADDLA,KDECLA/'A ','C ','D ','AC','DC'/
      DATA ISTAR,JBLANK/' * ',' '/
      MPY = 10000
      ITYPE5 = 5
      NEND1 = 99
      NEND2 = 999999
      NCOUNT = 0
C**** READ DATE
      READ(5,30) DATE
   30 FORMAT(18A1)
C**** READ UPDATE RECORDS
   10 NCOUNT = NCOUNT +1
      READ(5,20,END=40) (ISAVE(I,NCOUNT),I=1,23)
   20 FORMAT(I1,I2,I4A4,A1,A2,I2,I2,I2,I6,I2,I4,I2)
      KEYS(1,NCOUNT) = ISAVE(23,NCOUNT)
      KEYS(2,NCOUNT) = ISAVE(22,NCOUNT)
      KEYS(3,NCOUNT) = ISAVE(21,NCOUNT)
      KEYS(4,NCOUNT) = ISAVE(1,NCOUNT)
      KEYS(5,NCOUNT) = ISAVE(18,NCOUNT)
      KEYS(6,NCOUNT) = ISAVE(23,NCOUNT)
      IF(ISAVE(1,NCOUNT).EQ.4) GO TO 15
      IF(ISAVE(1,NCOUNT).NE.5) GO TO 35
      KEYS(6,NCOUNT) = 0
   35 KEYS(2,NCOUNT) = 0
      GO TO 10
   40 N = NCOUNT -1
C**** WRITE PAGE HEADINGS
      WRITE(6,28)
   28 FORMAT(1H1)
      WRITE(6,29) DATE
   29 FORMAT(39X,'IMS - STUDENT DATA BASE'/36X,'UPDATED: ',18A1//45X,
     1'PROGRAM LOG'/)
C     SORT UPDATE RECORDS
      I=SORT(LIST,IHEAD,N,COMPAR)
   45 IDELE = 0
      JFIN = 0
      LAST = 0
      KODE = 0
      ID1 = ISAVE(2,I)
      ID2 = ISAVE(21,I)*MPY+ISAVE(22,I)
      ITYPE = ISAVE(1,I)
      IJNIT = ISAVE(18,I)
      ISTD = ISAVE(23,I)
      KOMM= ISAVE(17,I)
```

```
C**** DETERMINE COMMAND TO BE EXECUTED
      IF(KOMM.EQ.KAD) KODE=1
      IF(KOMM.EQ.KCHANG) KODE=2
      IF(KOMM.EQ.KDELET) KODE=3
      IF(KOMM.EQ.KADCLA) KODE=4
      IF(KOMM.EQ.KDECLA) KODE=5
C     TEST FOR INVALID COMMAND AND PRINT ERROR MESSAGE
      IF(KODE) 5),5),75
    5) WRITE(6,17)
   17 FORMAT(1X,'*** ERROR ***  INVALID COMMAND IN FOLLOWING RECORD')
      WRITE(6,26) (ISAVE(K,I),K=1,23)
   26 FORMAT(1X,I1,1X,I4A4,A1,A2,1X,I2,A2,I6,I2,I4,I2)
C**** FIND NEXT RECORD IN LIST
   55 I=LIST(I)
      IF(I.EQ.0) GO TO 6))
      GO TO 45
C     READ RECORD FROM STUDENT DATA BASE
   75 READ(4,2)) JBASE
      JD1 = JBASE(2))
      JD2 = JBASE(21)*10**4+JBASE(22)
      JTYPE = JBASE(1)
      JUNIT = JBASE(18)
      JSTJD = JBASE(23)
      GO TO(1))),2)),3)),4)),5))),KODE
C**** ADD A RECORD (TYPE1 - TYPE4) ***************************************
*****
  1)) IF(ID1-JD1) 175,1)5,148
  1)5 IF(ID2-JD2) 175,11),148
  11) IF(ITYPE-JTYPE) 115,12),148
  115 IF(ITYPE.EQ.3) GO TO 153
      GO TO 14)
  12) IF(ITYPE-3) 14),125,13)
  125 IF(ISTJD-JSTJD) 14),18),145
  13) IF(IJMIT-JJMIT) 14),135,148
  135 IF(ISTJD-JSTJD)) 14),18),148
  14) WRITE(8,2)) (ISAVE(K,I),K=1,23)
      WRITE(6,21) (ISAVE(K,I),K=1,23)
   21 FORMAT(1X,I1,1X,I4A4,A1,A2,1X,I2,A2,I6,I2,I4,I2,'  RECORD ADDED')
  142 BACKSPACE 4
      GO TO 55
  145 IF(JBASE(7).EQ.ISTAR) GO TO 15)
  148 WRITE(8,2)) JBASE
      GO TO 75
  15) JBASE(7) = JBLANK
      WRITE(8,2)) JBASE
      GO TO 155
  153 JTY4 = 1
C**** CHECK NEXT UPDATE RECORD TO DETERMINE IF A STAR IS TO BE INSERTED
  155 LA = LIST(I)
      IF(LA.EQ.0) GO TO 16)
      IF(ISAVE(2,LA).EQ.ISAVE(2,I).AND.ISAVE(21,LA).EQ.ISAVE(21,I)
     1.AND.ISAVE(22,LA).EQ.ISAVE(22,I).AND.ISAVE(1,LA).EQ.ISAVE(1,I)
     2.AND.ISAVE(17,LA).EQ.ISAVE(17,I)) GO TO 165
```

```
C**** INSERT STAR IN RECORD
  160 LAST =1
      ISAVE(7,I) = ISTAR
C**** OMIT STAR INSERTION
  165 WRITE(6,20) (ISAVE(K,I),K=1,23)
      WRITE(6,21) (ISAVE(K,I),K=1,23)
      IF(JTY4.EQ.1) GO TO 168
      IF(LAST) 17),17),55
  168 IF(LAST) 17),17),142
  170 I=LIST(I)
      GO TO 155
C**** ERROR MESSAGES ******************************
  175 WRITE(6,11)
   11 FORMAT(1X,'*** ERROR ***  FOLLOWING RECORD ID NOT FOUND - ADD COMM
     1AND NOT EXECUTED')
      GO TO 185
  180 WRITE(6,12)
   12 FORMAT(1X,'*** ERROR ***  FOLLOWING RECORD ALREADY IN DATA BASE -
     1ADD COMMAND NOT EXECUTED')
  185 WRITE(6,26) (ISAVE(K,I),K=1,23)
      GO TO 142
C**** CHANGE A RECORD (TYPE1 - TYPE4) ************************************
*****                                 *
  200 IF(ID1-JD1) 265,205,24)
  205 IF(ID2-JD2) 265,21),24)
  210 IF(ITYPE-JTYPE) 265,22),24)
  220 IF(ITYPE-3) 25),225,23)
  225 IF(ISTJD-JSTJD) 265,245,24)
  230 IF(LJNIT-JJNIT) 265,235,24)
  235 IF(ISTJD-JSTJD) 265,25),24)
  240 WRITE(8,2)) JBASE
      GO TO 75
  245 IF(JBASE(7).EQ.ISTAR) GO TO 255
  250 WRITE(8,2)) (ISAVE(K,I),K=1,23)
      WRITE(6,22) (ISAVE(K,I),K=1,23)
   22 FORMAT(1X,I1,1X,I4A4,A1,A2,1X,I2,A2,I6,I2,I4,I2,'  RECORD CHANGED'
     1)
      GO TO 55
  255 LK = LIST(I)
      IF(LK.EQ.0) GO TO 25)
      IF(ISAVE(2),LK).EQ.ISAVE(2),I).AND.ISAVE(21,LK).EQ.ISAVE(21,I)
     1.AND.ISAVE(22,LK).EQ.ISAVE(22,I).AND.ISAVE(1,LK).EQ.ISAVE(1,I)
     2.AND.ISAVE(17,LK).EQ.KAD) GO TO 26)
      GO TO 25)
  260 ISAVE(7,I) = JBLANK
      GO TO 25)
C**** ERROR MESSAGE ******************************
  265 WRITE(6,13)
   13 FORMAT(1X,'*** ERROR ***  FOLLOWING RECORD NOT FOUND - CHANGE COMM
     1AND NOT EXECUTED')
      WRITE(6,26) (ISAVE(K,I),K=1,23)
      BACKSPACE 4
      GO TO 55
```

```
C**** DELETE A RECORD (ITYPE1 - ITYPE4) ************************************
*****                                  *
  300 IF(ID1-JD1) 360,305,335
  305 IF(ID2-JD2) 360,310,335
  310 IF(ITYPE-JTYPE) 360,315,335
  315 IF(ITYPE-3) 345,320,325
  320 IF(ISTUD-JSTUD) 360,340,335
  325 IF(IUNIT-JUNIT) 360,330,335
  330 IF(ISTUD-JSTUD) 360,345,335
  335 WRITE(6,2)) JBASE
      GO TO 75
  340 IF(JBASE(7).EQ.ISTAR) GO TO 350
  345 WRITE(6,23) JBASE
   23 FORMAT(1X,I1,1X,I4A4,A1,A2,1X,I2,A2,I6,I2,I2,'  RECORD DELETED'
     1)
      GO TO 5
  350 LK = LIST(I)
      IF(LK.EQ.0) GO TO 355
      IF(ISAVE(2,LK).EQ.ISAVE(2,I).AND.ISAVE(21,LK).EQ.ISAVE(21,I)
     1.AND.ISAVE(22,LK).EQ.ISAVE(22,I).AND.ISAVE(1,LK).EQ.ISAVE(1,I)
     2.AND.ISAVE(17,LK).EQ.KAD) GO TO 345
  355 BACKSPACE 4
      BACKSPACE 4
      BACKSPACE 8
      READ(4,2)) JBASE
      JBASE(7) = ISTAR
      WRITE(8,2)) JBASE
      READ(4,2)) JBASE
      GO TO 345
C**** ERROR MESSAGE ********************************
  360 WRITE(6,14)
   14 FORMAT(1X,'*** ERROR ***  FOLLOWING RECORD NOT FOUND - DELETE COMM
     1AND NOT EXECUTED')
      WRITE(6,26) (ISAVE(K,I),K=1,23)
      BACKSPACE 4
      GO TO 5
C**** ADD A CLASS **********************************************************
*****                                  *
  400 IF(ID1-JD1) 410,405,415
  405 IF(ID2-JD2) 410,455,415
  410 IF(ITYPE-3) 420,425,440
  415 WRITE(6,2)) JBASE
      GO TO 75
  420 WRITE(8,2)) (ISAVE(K,I),K=1,23)
      WRITE(6,24) (ISAVE(K,I),K=1,23)
   24 FORMAT(1X,I1,1X,I4A4,A1,A2,1X,I2,A2,I6,I2,I4,I2,'  CLASS RECORD AD
     1DED')
      I = LIST(1)
      ITYPE = ISAVE(1,I)
      GO TO 410
  425 LK = LIST(I)
      IF(LK.EQ.0) GO TO 430
```

```
      IF(ISAVE(20,LK).EQ.ISAVE(20,I).AND.ISAVE(21,LK).EQ.ISAVE(21,I)
     1.AND.ISAVE(22,LK).EQ.ISAVE(22,I).AND.ISAVE(1,LK).EQ.ISAVE(1,I))
     2GO TO 42)
      ISAVE(7,I) = ISTAR
      GO TO 445
  43) ISAVE(7,I) = ISTAR
      GO TO 45)
  44) LK = LIST(I)
      IF(LK.EQ.0) GO TO 45)
  445 IF(ISAVE(20,LK).EQ.ISAVE(20,I).AND.ISAVE(21,LK).EQ.ISAVE(21,I)
     1.AND.ISAVE(22,LK).EQ.ISAVE(22,I)) GO TO 43)
C**** WRITE LAST CLASS RECORD
  45) WRITE(8,20) (ISAVE(K,I),K=1,23)
      WRITE(6,24) (ISAVE(K,I),K=1,23)
C**** WRITE TYPE5 RECORD AT END OF CLASS
      WRITE(8,18) ITYPE5,NEND1,ISAVE(20,I),ISAVE(21,I),ISAVE(22,I),NEND1
      WRITE(6,19) ITYPE5,NEND1,ISAVE(20,I),ISAVE(21,I),ISAVE(22,I),NEND1
   18 FORMAT(I1,61X,I2,2X,I6,I2,I4,I2)
   19 FORMAT(1X,I1,61X,I2,2X,I6,I2,I4,I2,'  RECORD GENERATED')
      BACKSPACE 4
      GO TO 55
C**** ERROR MESSAGE ********************************
  455 WRITE(6,15)
   15 FORMAT(1X,'*** ERROR ***  FOLLOWING CLASS ID ALREADY IN DATA BASE
     1- ADD CLASS COMMAND NOT EXECUTED')
      WRITE(6,26) (ISAVE(K,I),K=1,23)
      BACKSPACE 4
      GO TO 55
C**** DELETE A CLASS ***********************************************
*****                          *
  50) IF(ID1-JD1) 51),505,515
  505 IF(ID2-JD2) 51),520),515
  510 IF(IDELE) 530),530),525
  515 WRITE(8,20) JBASE
      GO TO 75
  520 IDELE = IDELE+1
C**** WRITE DELETED CLASS RECORD
      WRITE(6,25) JBASE
   25 FORMAT(1X,I1,1X,1A4,A1,A2,1X,I2,A2,I6,I2,I4,I2,'  CLASS RECORD DE
     1LETED')
      GO TO 75
C**** END OF CLASS DELETE
  525 BACKSPACE 4
      GO TO 55
C**** ERROR MESSAGE ********************************
  530 WRITE(6,16)
   16 FORMAT(1X,'*** ERROR ***  FOLLOWING CLASS ID NOT FOUND - DELETE CL
     1ASS COMMAND NOT EXECUTED')
      WRITE(6,26) (ISAVE(K,I),K=1,23)
      GO TO 525
C     READ AND WRITE REMAINING RECORDS FROM STUDENT DATA BASE
  60) READ(4,20) JBASE
```

```
      JD1 = JBASE(20)
      JD2 = JBASE(21)*MPY+JBASE(22)
      JTYPE = JBASE(1)
      JUNIT = JBASE(18)
      JSTJD = JBASE(23)
      WRITE(8,20) JBASE
      IF(JD1.EQ.NEND2.AND.JD2.EQ.NEND2) GO TO 65
      GO TO 60
   65 READ(4,20) JBASE
      WRITE(8,20) JBASE
      END FILE 8
C**** END OF DATA BASE UPDATE
      WRITE(6,27)
   27 FORMAT(1HO,'********** END OF DATA BASE UPDATE **********')
      REWIND 4
      REWIND 8
      WRITE(6,28)
      WRITE(6,31) DATE
   31 FORMAT(39X,'IMS - STUDENT DATA BASE'/36X,'UPDATED: ',I8A1//41X,
     1'DATA BASE PRINTOUT'/)
C**** PRINT UPDATED DATA BASE **********
   90 READ(8,20,END=100) JBASE
      WRITE(6,36) JBASE
      GO TO 90
  100 REWIND 8
      WRITE(6,28)
      STOP
      END
```

```
      INTEGER FUNCTION SORT(LIST,IHEAD,N,COMPAR)
C
C     GENERAL SORT ROUTINE
C     LIST IS AT LEAST N WORDS LONG, WHERE N IS THE NUMBER OF RECORDS
C     TO BE SORTED.
C     IHEAD IS ALSO N WORDS LONG AND IS USED AS A SCRATCH AREA.
C     COMPAR IS A 2-ARGUMENT INTEGER FUNCTION HAVING A NEGATIVE VALUE
C     IF THE RECORD REFERENCED BY THE FIRST ARGUMENT IS TO BE SORTED
C     BEFORE THE RECORD REFERENCED BY THE SECOND ARGUMENT, A ZERO VALUE
C     IF THE ORDER IS IMMATERIAL, AND A POSITIVE VALUE OTHERWISE.
C     SINCE SORT DEALS WITH RECORD INDEXES ONLY, THE SORT KEYS MAY BE
C     ARBITRARILY COMPLEX, AND THE RECORDS TO BE SORTED NEED NOT BE
C     IN MEMORY.
C
C     USAGE
C
C     INTEGER SORT
C     EXTERNAL COMPAR (OPTIONAL, COMPAR MAY BE INTERNAL)
C     I=SORT(LIST,IHEAD,N,COMPAR)
C   4 IF (I.EQ.0) GO TO 3
C     DO ANY PROCESSING FOR RECORD I HERE.
C   3 CONTINUE
C     I=LIST(I)
C     GO TO 4
C
      INTEGER COMPAR,DIREC
      INTEGER LIST(N),IHEAD(N)
      EQUIVALENCE (MP,DIRECT),(JHEAD,NCHAIN)
      EXTERNAL COMPAR
C
C     START BY SCANNING ALL RECORDS TO DETECTING ASCENDING OR
C     DESCENDING CHAINS.  PUT THE HEADS OF THESE CHAINS IN IHEAD.
C
      M=1
C
C     INDICATE BEGINNING OF CHAIN
C
      DIREC=0
      I=1
C
C     INDICATE RECORD I HEAD OF CHAIN
C
      JHEAD=I
      LIST(I)=0
    1 IF(I.GE.N) GO TO 10
      II=I+1
C
C     CHECK SEQUENCE OF TWO ADJACENT RECORDS.
C
      IF(COMPAR(I,II)) 2,22,8
   22 IF(DIREC) 9,3,4
C
C     RECORDS I,I+1 ARE IN ASCENDING SEQUENCE.
```

```
C
      IF(DIRECT) 7,2,4
C
C     START A FORWARD CHAIN.
C
    4 DIRECT=1
      JHEAD=I
C
C     CONTINUE A FORWARD CHAIN.
C
      LISTS(I)=II
      I=II
      GO TO 1
C
C     HAD A CHAIN, GOT A SEQUENCE CHANGE.
C     INDICATE END OF CHAIN
C
      LISTS(I)=0
C
C     SAVE HEAD OF CHAIN
C
    7 IHEAD(M)=JHEAD
      M=M+1
      DIRECT=0
      GO TO 5
C
C     RECORDS I,I+1 ARE IN DESCENDING SEQUENCE.
C
    8 IF(DIRECT) 9,99,5
C
C     START A BACKWARD CHAIN.
C
   99 DIRECT=-1
C
C     INDICATE END OF CHAIN
C
      LISTS(I)=0
C
C     CONTINUE A BACKWARD CHAIN
C
    9 LISTS(II)=I
C
C     UPDATE HEAD OF CHAIN
C
      JHEAD=II
      GO TO 5
C
C     END OF CHAIN DETECTION.  CLEAN UP AND START MERGE PASS.
C
   10 IHEAD(M)=JHEAD
      IF (DIRECT.GE.0) LISTS(I)=0
      IF (DIRECT.EQ.0) IHEAD(M)=N
```

```
11      I=-1
        MP=)
12      I=I+2
        IF (I.LT.M) GO TO 15
        IF (I.EQ.M) GO TO 14
13      M=MP
        IF (M.NE.1) GO TO 11
        SORT=IHEAD(1)
        IHEAD(1)=0
        RETURN
14      MP=MP+1
        IHEAD(MP)=IHEAD(I)
        IF (I.EQ.1) GO TO 13
        IHEAD(I)=)
        GO TO 13
15      J1=IHEAD(I)
        J2=IHEAD(I+1)
        IHEAD(I)=)
        IHEAD(I+1)=)
        I1=J1
        I2=J2
        MP=MP+1
        NCHAIN=)
16      IF (COMPAR(J1,J2).LE.)) GO TO 17
C
C       J2 SHOULD COME BEFORE J1.
C
        IF (NCHAIN.EQ.)) IHEAD(MP)=J2
        IF(NCHAIN.EQ.1) LISTS(I1)=J2
        NCHAIN=2
        I2=J2
        J2=LISTS(I2)
        IF(J2.NE.)) GO TO 16
        LISTS(I2)=J1
        GO TO 12
C
C       J1 SHOULD COME BEFORE J2.
C
17      IF (NCHAIN.EQ.)) IHEAD(MP)=J1
        IF (NCHAIN.EQ.2) LISTS(I2)=J1
        NCHAIN=1
        I1=J1
        J1=LISTS(I1)
        IF(J1.NE.)) GO TO 16
        LISTS(I1)=J2
        GO TO 12
        END
```

```
      INTEGER FUNCTION COMPAR(I,J)
      COMMON KEYS(6,500)
      DO 100 K=1,5
      IF(KEYS(K,I)-KEYS(K,J)) 700,800,900
  100 CONTINUE
  700 COMPAR = -1
      RETURN
  800 COMPAR = 0
      RETURN
  900 COMPAR = 1
      RETURN
      END
```

DATE: _____

PROJECT: _____

ATTACHMENT 1
CARD LAYOUT FORM

Type of Card Type 1: Class I.D. Card (Input Format)

Field No.	Field Description	Columns From	Columns Thru	No. of Columns	Coding Instructions
1	Card Type	1	1	1	A 1 is required in this column.
2	District Name	3	21	19	Alpha
3	School Name	22	40	19	Alpha
4	Teacher Name	41	59	19	Alpha
5	Command Code	60	61	2	Alpha
6	Site Number	64	65	2	
7	District Number	67	68	2	
8	School Number	69	70	2	
9	Teacher Number	71	72	2	
10	Program Number	73	74	2	
11	Grade Number	75	76	2	
12	Class Number	77	78	2	

Comments:

All fields are numeric unless otherwise noted.

The contents of all numeric fields must be right-justified.

DATE: _____

PROJECT: _____

ATTACHMENT 2
CARD LAYOUT FORM

Type of Card Type 2: Class I.D. Continuation Card (Input Format)

Field No.	Field Description	Columns From	Columns Thru	No. of Columns	Coding Instructions
1	Card Type	1	1	1	A 2 is required in this column.
2	Program Name	3	21	19	Alpha
3	Grade	22	40	19	Alpha
4	Class	41	59	19	Alpha
5	Command Code	60	61	2	Alpha
6	District	67	68	2	
7	School	69	70	2	
8	Teacher	71	72	2	
9	Program	73	74	2	
10	Grade	75	76	2	
11	Class	77	78	2	

Comments:

All fields are numeric unless otherwise noted.

The contents of all numeric fields must be right-justified.

DATE: _____

PROJECT: _____

ATTACHMENT 3

CARD LAYOUT FORM

Type of Card: **Type 3: Student Name Card (Input Format)**

Field No.	Field Description	Columns From	Columns Thru	No. of Columns	Coding Instructions
1	Card Type	1	1	1	A 3 is required in this column.
2	Student Name	3	22	20	Last name, First name
3	Command Code	60	61	2	Alpha
4	Status	64	64	1	
5	Group	65	66	2	
6	District	67	68	2	
7	School	69	70	2	
8	Teacher	71	72	2	
9	Program	73	74	2	
10	Grade	75	76	2	
11	Class	77	78	2	
12	Student Number	79	80	2	

Comments:

All fields are numeric unless otherwise noted.

The contents of all numeric fields must be right-justified.

DATE: _____

PROJECT: _____

ATTACHMENT 4
CARD LAYOUT FORM

Type of Card Type 4: Student Score Card (Input Format)

Field No.	Field Description	Columns From	Columns Thru	No. of Columns	Coding Instructions
1	Card Type	1	1	1	A 4 is required in this column.
2	Outcome 1 Score	3	4	2	
3	Outcome 2 Score	5	6	2	
4	Outcome 3 Score	7	8	2	
5	Outcome 4 Score	9	10	2	
6	Outcome 5 Score	11	12	2	
7	Outcome 6 Score	13	14	2	
8	Total Score	16	18	2	
9	Item Responses	20	47	28	
10	Test Date	49	54	6	Year, Month and Day
11	Command Code	60	61	2	Alpha
12	Unit	63	64	2	
13	Group	65	66	2	

Comments:

All fields are numeric unless otherwise noted.

The contents of all numeric fields must be right-justified.

DATE: _____

PROJECT: _____

CARD LAYOUT FORM

Type of Card Type 4: Student Score Card (Continued)

Field No.	Field Description	Columns From	Columns Thru	No. of Columns	Coding Instructions
14	District	67	68	2	
15	School	69	70	2	
16	Teacher	71	72	2	
17	Program	73	74	2	
18	Grade	75	76	2	
19	Class	77	78	2	
20	Student Number	79	80	2	

Comments:

ATTACHMENT 5

SAMPLE INPUT

JANUARY 26, 1972			
3 NAME, MISSING			C 10001010102010007
3 NEWCOMER, JOHNNY			A 0001010102010022
3 LASTONE, CINDY			A 0001010102010023
3			D 0201010302010031
			DC 010104030200
3 YNAJASA, NANCY MAE			C 0601010502010027
3 ZEBEDEE, MARIAH			A 0001010502010028
1 DISTRICT	SCHOOL	TEACHER	AC 77 020202020202
2 PROGRAM	GRADE	CLASS	AC 77 020202020202
3 STUDENT, FIRST			AC 02020202020201
3 STUDENT, SECOND			AC 02020202020202
3 STUDENT, THIRD			AC 02020202020203
3 STUDENT, FOURTH			AC 02020202020204
3 STUDENT, FIFTH			AC 02020202020205
3 STUDENT, SIXTH			AC 02020202020206
3 STUDENT, SEVENTH			AC 02020202020207
3 STUDENT, EIGHTH			AC 02020202020208
3 STUDENT, NINTH			AC 02020202020209
3 STUDENT, LAST			AC 02020202020210

ATTACHMENT 6

SAMPLE OUTPUT

IMS - STUDENT DATA BASE
UPDATED: FEBRUARY 29, 1972

PROGRAM LOG

3	NAME, MISSING						C	100	10101	2	100	7 RECORD CHANGED
3	NEWCOMER, JOHNNY						A	000	10101	2	10022	RECORD ADDED
3	LASTONE, CINDY	*					A	000	10101	2	10023	RECORD ADDED
3	MALIGLIC MICHAEL	*					D	0	2	10103	2	10031 RECORD DELETED
1	ROWLAND	HOLLINGSWORTH		MARY MC CARVILLE			D	99		10104	3	200 0 CLASS RECORD DELETED
2	LNS-HR2	SECOND		AM			D	99		10104	3	200 0 CLASS RECORD DELETED
3	MARCUS, HAL						D	0	0	10104	3	200 1 CLASS RECORD DELETED
3	OLENICK, BOBBY						D	0	0	10104	3	200 2 CLASS RECORD DELETED
3	HENRY, GWEN						D	0	0	10104	3	200 3 CLASS RECORD DELETED
3	SIMETZ, KIETH						D	0	0	10104	3	200 4 CLASS RECORD DELETED
3	VIDAL, SHARON						D	0	0	10104	3	200 5 CLASS RECORD DELETED
3	SYLMIRE, DAVID						D	0	0	10104	3	200 6 CLASS RECORD DELETED
3	ROSAS, JACKIE						D	0	0	10104	3	200 7 CLASS RECORD DELETED
3	MORGENSON, MATT						D	0	0	10104	3	200 8 CLASS RECORD DELETED
3	REDSTONE, CHRIS						D	0		10104	3	200 9 CLASS RECORD DELETED
3	CRAIG, BRIAN						D	0	0	10104	3	20010 CLASS RECORD DELETED
3	NAJARIAN, MARY						D	0	0	10104	3	20011 CLASS RECORD DELETED
3	BUNGALON, NORLISA						D	0	0	10104	3	20012 CLASS RECORD DELETED
3	SOFFNER ARTHUR						D	0	0	10104	3	20013 CLASS RECORD DELETED
3	WOOSLEY ROBIN	*					D	0	0	10104	3	20014 CLASS RECORD DELETED
4	4 5 5 0 0 0	14	101111111111111		711213		D	0	5	0	10104	3 200 1 CLASS RECORD DELETED
4	4 5 5 0 0 0	14	101111111111111		711213		D	0	5	0	10104	3 200 2 CLASS RECORD DELETED
4	5 5 4 0 0 0	14	111111111110111		711213		D	0	5	0	10104	3 200 3 CLASS RECORD DELETED
4	5 5 5 0 0 0	15	111111111111111		711213		D	0	5	0	10104	3 200 4 CLASS RECORD DELETED
4	5 5 5 0 0 0	15	111111111111111		711213		D	0	5	0	10104	3 200 5 CLASS RECORD DELETED
4	3 5 5 0 0 0	13	101101111111111		711213		D	0	5	0	10104	3 200 6 CLASS RECORD DELETED
4	5 5 5 0 0 0	15	111111111111111		711213		D	0	5	0	10104	3 200 7 CLASS RECORD DELETED
4	4 5 5 0 0 0	14	111101111111111		711213		D	0	5	0	10104	3 200 8 CLASS RECORD DELETED
4	5 5 5 0 0 0	15	111111111111111		711213		D	0	5	0	10104	3 20010 CLASS RECORD DELETED
4	5 5 5 0 0 0	15	111111111111111		711213		D	0	5	0	10104	3 20011 CLASS RECORD DELETED
4	3 5 5 0 0 0	13	011101111111111		711213		D	0	5	0	10104	3 20012 CLASS RECORD DELETED
4	4 5 5 0 0 0	14	111101111111111		72 118		D	0	6	0	10104	3 200 1 CLASS RECORD DELETED
4	5 5 5 0 0 0	15	111111111111111		72 118		D	0	6	0	10104	3 200 2 CLASS RECORD DELETED
4	5 5 5 0 0 0	15	111111111111111		72 118		D	0	6	0	10104	3 200 3 CLASS RECORD DELETED

```
4  5 5 5 0 0 0  15 111111111111111          72 118      0  6 0 10104 3 200 4  CLASS RECORD DELETED
4  4 3 4 0 0 0  11 111101100111011          72 118      0  6 0 10104 3 200 5  CLASS RECORD DELETED
4  5 4 5 0 0 0  14 111111101111111          72 118      0  6 0 10104 3 200 6  CLASS RECORD DELETED
4  4 5 5 0 0 0  14 111101111111111          72 118      0  6 0 10104 3 200 7  CLASS RECORD DELETED
4  3 4 4 0 0 0  11 111000111101111          72 118      0  6 0 10104 3 200 8  CLASS RECORD DELETED
4  4 5 5 0 0 0  14 111011111111111          72 118      0  6 0 10104 3 20010  CLASS RECORD DELETED
4  5 5 4 0 0 0  14 111111111111011          72 118      0  6 0 10104 3 20011  CLASS RECORD DELETED
4  4 5 5 0 0 0  14 111011111111111          72 118      0  6 0 10104 3 20012  CLASS RECORD DELETED
4  3 5 4 0 0 0  12 111001111111011          72 118      0  6 0 10104 3 20013  CLASS RECORD DELETED
4  4 5 4 0 0 0  13 111101111111011          72 118      0  6 0 10104 3 20014  CLASS RECORD DELETED
5  0 0 0 0 0 0   0                           0 0 0       0 99 0 10104 3 20099  CLASS RECORD DELETED
3 YNAJASA, NANCY MAE                                    C    006 10105 2 10027  RECORD CHANGED
3 ZEBELEE, MARIAH      *                                A    000 10105 2 10028  RECORD ADDED
1 DISTRICT              SCHOOL          TEACHER         AC   77  20202 2 202 0  CLASS RECORD ADDED
2 PROGRAM               GRADE           CLASS           AC   77  20202 2 202 0  CLASS RECORD ADDED
3 STUDENT, FIRST                                        AC   0   20202 2 202 1  CLASS RECORD ADDED
3 STUDENT, SECOND                                       AC   0   20202 2 202 2  CLASS RECORD ADDED
3 STUDENT, THIRD                                        AC   0   20202 2 202 3  CLASS RECORD ADDED
3 STUDENT, FOURTH                                       AC   0   20202 2 202 4  CLASS RECORD ADDED
3 STUDENT, FIFTH                                        AC   0   20202 2 202 5  CLASS RECORD ADDED
3 STUDENT, SIXTH                                        AC   0   20202 2 202 6  CLASS RECORD ADDED
3 STUDENT, SEVENTH                                      AC   0   20202 2 202 7  CLASS RECORD ADDED
3 STUDENT, EIGHTH                                       AC   0   20202 2 202 8  CLASS RECORD ADDED
3 STUDENT, NINTH                                        AC   0   20202 2 202 9  CLASS RECORD ADDED
3 STUDENT, LAST         *                               AC   0   20202 2 20210  CLASS RECORD ADDED
5                                                           99   20202 2 20299  RECORD GENERATED
********** END OF DATA BASE UPDATE **********
```

SAMPLE ERROR MESSAGES

```
                                                                C  100 10101 20100 7  RECORD CHANGED
3 NAME, MISSING
*** ERROR ***  FOLLOWING RECORD ALREADY IN DATA BASE - ADD COMMAND NOT EXECUTED
                                                                A  000 10101 2010022
3 NEWCOMER, JOHNNY
*** ERROR ***  FOLLOWING RECORD ALREADY IN DATA BASE - ADD COMMAND NOT EXECUTED
                                                                A  000 10101 2010023
3 LASTONE, CINDY
*** ERROR ***  FOLLOWING RECORD NOT FOUND - DELETE COMMAND NOT EXECUTED
                                                                D  002 10103 2010031
3
*** ERROR ***  FOLLOWING CLASS ID NOT FOUND - DELETE CLASS COMMAND NOT EXECUTED
                                                                DC  0  10104 30200 0
0
                                                                C  006 10105 2010027  RECORD CHANGED
3 YNAJASA, NANCY MAE
*** ERROR ***  FOLLOWING RECORD ALREADY IN DATA BASE - ADD COMMAND NOT EXECUTED
                                                                A  000 10105 2010028
3 ZEBEDEE, MARIAH
*** ERROR ***  FOLLOWING CLASS ID ALREADY IN DATA BASE - ADD CLASS COMMAND NOT EXECUTED
                                                                AC  77  20202 20202 0
1 DISTRICT          SCHOOL              TEACHER
*** ERROR ***  FOLLOWING CLASS ID ALREADY IN DATA BASE - ADD CLASS COMMAND NOT EXECUTED
                                                                AC  77  20202 20202 0
2 PROGRAM           GRADE               CLASS
*** ERROR ***  FOLLOWING CLASS ID ALREADY IN DATA BASE - ADD CLASS COMMAND NOT EXECUTED
                                                                AC  0   20202 20202 1
3 STUDENT, FIRST
*** ERROR ***  FOLLOWING CLASS ID ALREADY IN DATA BASE - ADD CLASS COMMAND NOT EXECUTED
                                                                AC  0   20202 20202 2
3 STUDENT, SECOND
*** ERROR ***  FOLLOWING CLASS ID ALREADY IN DATA BASE - ADD CLASS COMMAND NOT EXECUTED
                                                                AC  0   20202 20202 3
3 STUDENT, THIRD
*** ERROR ***  FOLLOWING CLASS ID ALREADY IN DATA BASE - ADD CLASS COMMAND NOT EXECUTED
                                                                AC  0   20202 20202 4
3 STUDENT, FOURTH
*** ERROR ***  FOLLOWING CLASS ID ALREADY IN DATA BASE - ADD CLASS COMMAND NOT EXECUTED
                                                                AC  0   20202 20202 5
3 STUDENT, FIFTH
*** ERROR ***  FOLLOWING CLASS ID ALREADY IN DATA BASE - ADD CLASS COMMAND NOT EXECUTED
                                                                AC  0   20202 20202 6
3 STUDENT, SIXTH
*** ERROR ***  FOLLOWING CLASS ID ALREADY IN DATA BASE - ADD CLASS COMMAND NOT EXECUTED
                                                                AC  0   20202 20202 7
3 STUDENT, SEVENTH
*** ERROR ***  FOLLOWING CLASS ID ALREADY IN DATA BASE - ADD CLASS COMMAND NOT EXECUTED
                                                                AC  0   20202 20202 8
3 STUDENT, EIGHTH
*** ERROR ***  FOLLOWING CLASS ID ALREADY IN DATA BASE - ADD CLASS COMMAND NOT EXECUTED
                                                                AC  0   20202 20202 9
3 STUDENT, NINTH
*** ERROR ***  FOLLOWING CLASS ID ALREADY IN DATA BASE - ADD CLASS COMMAND NOT EXECUTED
                                                                AC  0   20202 2020210
3 STUDENT, LAST
********** END OF DATA BASE UPDATE **********
```

SAMPLE DATA BASE PRINTOUT

```
1 ROWLAND              HOLLINGWORTH        MABELLE CONRADSON    0  99  10101 2 100 0
2 LMS-HR1              FIRST                                    0  99  10101 2 100 0
3 HARVEY, CHRISTINE                                             0  0 0 10101 2 100 1
3 DE LA CRUZ, RODOLFO                                           0  0 0 10101 2 100 2
3 KING, JAMES M.                                                0  0 0 10101 2 100 3
3 LESENEY, JOSEPH                                               0  0 0 10101 2 100 4
3 MENDEZ, ROSALVA                                               0  0 0 10101 2 100 5
3 MARCUS, RODNEY                                                0  0 0 10101 2 100 6
3 NAME, MISSING                                                 C  100 10101 2 100 7
3 O'QUINN, MICHAEL                                              0  0 0 10101 2 100 8
3 PETRO, TAMARA                                                 0  0 0 10101 2 100 9
3 RABTKE, TERENCE                                               0  0 0 10101 2 10010
3 SANCHEZ, ROBERT                                               0  0 0 10101 2 10011
3 STANDAGE, RICHARD                                             0  0 0 10101 2 10012
3 TAKAHASHI, JANET                                              0  0 0 10101 2 10013
3 VERKOUTEREN, ANTHONY                                          0  0 0 10101 2 10014
3 BUONAURO, MARIA                                               0  0 0 10101 2 10015
3 CHAVEZ, VALERIE                                               0  0 0 10101 2 10016
3 GARRETT, ANGELA                                               0  0 0 10101 2 10017
3 LOPEZ, ALBERT                                                 0  0 0 10101 2 10018
3 MOYER, JANET                                                  0  0 0 10101 2 10019
3 PETERSON, KURT                                                0  0 0 10101 2 10020
3 LAMMERS, MARK                                                 0  0 0 10101 2 10021
3 NEWCOMER, JOHNNY                                              A  000 10101 2 10022
3 LASTONE, CINDY       *                                        A  000 10101 2 10023
4  3 4 3 0 0 0  10 1011011101100111   711217   0  4 0 10101 2 100 1
4  5 4 4 0 0 0  13 1111111011101111   711217   0  4 0 10101 2 100 2
4  4 4 4 0 0 0  12 1110110111101111   711217   0  4 0 10101 2 100 3
4  5 3 3 0 0 0  11 1111110101101101   711217   0  4 0 10101 2 100 4
4  4 3 3 0 0 0  10 1011110101001111   711217   0  4 0 10101 2 100 5
4  5 4 4 0 0 0  13 1111101111101111   711217   0  4 0 10101 2 100 6
4  3 4 3 0 0 0  10 1101011101100111   711217   0  4 0 10101 2 100 8
4  4 3 3 0 0 0  10 1011110101101100   711217   0  4 0 10101 2 100 9
4  5 4 4 0 0 0  13 1111111011101111   711217   0  4 0 10101 2 10010
4  4 4 3 0 0 0  11 1110111011100111   711217   0  4 0 10101 2 10011
4  4 3 3 0 0 0  10 1110110011100111   711217   0  4 0 10101 2 10012
4  3 3 4 0 0 0  10 0110110101101111   711217   0  4 0 10101 2 10013
4  5 4 4 0 0 0  13 1111111011101111   711217   0  4 0 10101 2 10015
4  4 5 5 0 0 0  14 1110111111111111   711217   0  4 0 10101 2 10016
4  3 4 5 0 0 0  12 0011111101111111   711217   0  4 0 10101 2 10018
4  5 5 4 0 0 0  14 1111111111110111   711217   0  4 0 10101 2 10019
4  5 4 4 0 0 0  13 1111111011110111   711217   0  4 0 10101 2 10020
4  5 5 4 0 0 0  14 1111111111111011   711217   0  4 0 10101 2 10021
5  0 0 0 0 0 0   0                    0 0 0    0 99 0 10101 2 10099
```

1	DISTRICT	SCHOOL	TEACHER	AC	77	20202	2	202	0		
2	PROGRAM	GRADE	CLASS	AC	77	20202	2	202	0		
3	STUDENT, FIRST			AC	0	20202	2	202	1		
3	STUDENT, SECOND			AC	0	20202	2	202	2		
3	STUDENT, THIRD			AC	0	20202	2	202	3		
3	STUDENT, FOURTH			AC	0	20202	2	202	4		
3	STUDENT, FIFTH			AC	0	20202	2	202	5		
3	STUDENT, SIXTH			AC	0	20202	2	202	6		
3	STUDENT, SEVENTH			AC	0	20202	2	202	7		
3	STUDENT, EIGHTH			AC	0	20202	2	202	8		
3	STUDENT, NINTH			AC	0	20202	2	202	9		
3	STUDENT, LAST	*		AC	0	20202	2	20210			
5					99	20202	2	20299			
1	GARDEN GROVE	EDGAR	RITA MECHERIKOFF	0	99	20202	3	100	0		
2	LRS-HR2	FIRST	AM	0	99	20202	3	100	0		
3	ARCHER, ROBBIE			0	0	1	20202	3	100	1	
3	FISHER, MIKE			0	0	1	20202	3	100	2	
3	FOEHR, DANNY			0	0	1	20202	3	100	3	
3	HALE, BETTINA			0	0	1	20202	3	100	4	
3	HEFNER, LISA			0	0	1	20202	3	100	5	
3	MC INTOSH, STEPHANIE			0	0	1	20202	3	100	6	
3	SELLERS, TODD			0	0	1	20202	3	100	7	
3	SPARROW, KELLY			0	0	1	20202	3	100	8	
3	FIRMIN, DAVID			0	0	2	20202	3	100	9	
3	GOSSELIN, NATHALIE			0	0	2	20202	3	10010		
3	HENKEL, TED			0	0	2	20202	3	10011		
3	HUNSAKER, KEVIN			0	0	2	20202	3	10012		
3	KNAPP, STEVEN			0	0	2	20202	3	10013		
3	ROSE, BOB			0	0	2	20202	3	10014		
3	SCHULTZ,, CIDNEY	*		0	0	2	20202	3	10015		
5					99		20202	3	10099		